

### **REMARKS**

The Official Action mailed June 15, 2007 has been carefully considered. Reconsideration and allowance of the subject application, as amended, are respectfully requested.

#### **Claim amendments**

Independent apparatus claims 1 and 74 have been amended herein to recite an “amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal.” Independent method claim 56 has been amended to recite “selectively adjusting a depth of said periodic amplitude modulation.” These limitations are similar to limitations found in original claims 19, 67 and 87. Applicant believes no new search should be required.

Claims 8, 19, 40, 45, 63, 67, 81 and 87 have been cancelled without prejudice, and claims 3, 5-7, 37-39, 58, 60-62, 76, 78-80 and 85 have been amended for consistency with the amendments to claims 1, 56 and 74. Applicant believes no new matter has been added in connection with any of the amendments herein.

#### **35 U.S.C. §102**

Claims 1, 10-13, 16-18, 56, and 64-66 were rejected under 35 U.S.C. §102(b) as being anticipated by Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, “10/Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format”, Electron. Lett. Vol. 30, 1994, pages 1694-1695, hereinafter “Sano”).

Independent claim 1 has been amended to recite an “amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal”, and independent claim 56 has been amended to recite “selectively adjusting a depth of said periodic amplitude modulation.” At least these limitations are entirely absent from the teachings of Sano. In fact, Sano has not been cited as providing any teaching or suggestion of these recitations.

Claims 10-13, 16-18 and 64-66 depend, either directly or ultimately, from claims 1 or 56, and are not anticipated by Sano by virtue of their dependency, as well as for their own recitations.

Applicant respectfully requests, therefore, that the rejection of claims 1, 10-13, 16-18, 56 and 64-66 under 35 U.S.C. § 102(b) as being anticipated by Sano be withdrawn upon reconsideration.

35 U.S.C. § 103

Claims 3, 5-9, 14-15, 19, 31, 58, 60-63 and 67 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Sano. Applicant respectfully traverses this rejection.

Claims 8, 19 and 63 and 67 have been cancelled without prejudice, and limitations similar to those found in original claims 19 and 67 have been incorporated into independent claims 1 and 56, respectively. Claims 3, 5-7, 9, 14-15, 31, 58 and 60-62 depend either directly or ultimately from claim 1 or 56.

All of the presently pending claims require either an “amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal” (independent claims 1 and 74) or “selectively adjusting a depth of said periodic amplitude modulation” (independent claim 56). In regard to these limitations, the Official Action correctly acknowledges that “Sano does not disclose expressly that the modulation depth changes from 20% to 100%.” *Official Action dated June 15, 2007, Section 6, page 4*. It is argued, however, that:

“[I]t would have been obvious to one having ordinary skill in the art at the time the invention was made **to use any kind of detector in order to detect the incident beam**, where the claimed differences involved to (sic) the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. *In re Ruff, 111 USPQ, 343 (CCPA 1958)*. This supporting is based on a recognition that the claimed differences exist not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedients known to the artisan of ordinary skill as design choices. *Id. at 4-5. (emphasis added)*.

First, Applicant is not sure what the Examiner is referring to in connection with the language “to use any kind of detector in order to detect the incident beam.” *Id.* It is assumed this reference represents a clerical or typographical error. The pending claims do not recite a detector for detecting an incident beam.

Also, amended claims 1, 56 and 74 do not simply include “differences involved to (sic) the substitution of interchangeable or replaceable equivalents”, as suggested by the Examiner. *See Id.* On the contrary, as indicated, for example, at page 6, lines 3-8, page 8, lines 4-24, page 12, line 21 to page 13, line 15, and in FIGS. 2 and 5, a system or method as set forth in claims 1, 56 and 74 including an “amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal” (independent claims 1 and 74) or “selectively adjusting a depth of said periodic amplitude modulation” (independent claim 56), provides significant advantages. In particular, allowing for selective adjustment of the amplitude modulation, e.g. the depth of modulation as shown in FIG. 2, allows for optimization of individual channels in the system. As shown in FIG. 5, for example, channel 19 of 20 may exhibit a maximum Q-factor at a modulation depth of about 90%, whereas channel 3 of 20 may exhibit a maximum Q-factor at a modulation depth of about 40%. Allowing selective adjustment of the amplitude modulation depth facilitates setting the modulation to achieve a desired performance, e.g. maximum Q-factor.

Moreover, Applicant finds nothing in Sano that teaches or suggests an “amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal” or “selectively adjusting a depth of said periodic amplitude modulation”, as set forth in claims 1, 56 and 74. Indeed, Sano appears to *teach away* from the claimed configuration in extolling the virtues of a pure return-to-zero format compared to a non-return-to-zero format. *See, e.g. Sano, “Conclusion” at page 1695.* Any modification of Sano away from a pure return-to-zero format would appear to be contrary to the conclusion of Sano and therefore defeat its intended purpose or result.

Applicant respectfully submits, therefore, that independent claims 1, 56 and 74 could not have been obvious in view of Sano at the time the invention was made. Claims 3, 5-7, 9, 14-15, 31, 58 and 60-62 depend either directly or ultimately from claim 1 or 56, and are allowable over Sano by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejections of claims 3, 5-9, 14-15, 19, 31, 58, 60-63 and 67 under U.S.C. § 103(a) as being obvious in view of Sano be withdrawn upon reconsideration.

Claims 2, 4, 37-45, 57, 59 and 74-79 were rejected under 35 U.S.C. § 103(a) as being obvious over Sano in view of Meissner et al. (U.S. Patent No. 5,060,311, hereinafter “Meissner”). Claims 20, 22-27 and 69-72 were rejected under 35 U.S.C. § 103(a) as being obvious over Sano in view of Kitajima et al. (U.S. Patent No. 5,515,196, hereinafter “Kitajima”). Claims 46-50 and 90-98 were rejected under 35 U.S.C. § 103(a) as being obvious over Sano in view of Meissner and Kitajima. Claims 21 and 68 were rejected under 35 U.S.C. § 103(a) as being obvious over Sano in view of Kitajima and Takayama et al. (K. Takayama et al., “An all-optical 10-GHz LD-based clock regenerator using a Mach-Zehnder interferometer-type NRZ-RZ converter”, Tech digest of ECOC '91, vol. MoC1-2, pp. 77-80, September 1991, hereinafter “Takayama”).

Again, all of the presently pending claims require either an “amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal” (independent claims 1 and 74) or “selectively adjusting a depth of said periodic amplitude modulation” (independent claim 56). As discussed above, Sano fails to teach or suggest these recitations. Applicant finds nothing in Meissner, Kitajima or Takayama that provides the missing teachings, and, in fact, these references have not been cited as providing such teachings.

Claims 40 and 45 have been cancelled without prejudice. Claims 2, 4, 37-39, 41-44, 57, 59 and 74-79, claims 20, 22-27 and 69-72, claims 46-50 and 90-98, and claims 21 and 68 depend either directly or ultimately from claim 1, 56 or 74. These claims are allowable over the cited references by virtue of their dependency, as well as for their own recitations. For example, Applicant finds nothing in the references that teaches or suggests providing amplitude modulation with a “prescribed phase”, as set forth in claims 16-18 and 43-44, or that teaches or suggests feedback from a receiver, as set forth in claims 85-86, 88-89 and 95-98. Applicant respectfully requests, therefore, that the rejections of claims 2, 4, 37-45, 57, 59 and 74-79, claims 20, 22-27 and 69-72, claims 46-50 and 90-98, and claims 21 and 68 under U.S.C. § 103(a) be withdrawn upon reconsideration.

Double Patenting

Claims 1 and 56 have been rejected for obviousness-type double patenting over claim 45 of U.S. Patent Application No. 10/689,484. Although claims 1 and 56 have been amended herein, Applicant encloses an appropriate terminal disclaimer to obviate any remaining double-patenting rejections.

Having dealt with all the objections raised by the Examiner, it is respectfully submitted that the present application, as amended, is in condition for allowance. Thus, early allowance is earnestly solicited.

If the Examiner desires personal contact for further disposition of this case, the Examiner is invited to call the undersigned Attorney at 603.668.6560.

In the event there are any fees due, please charge them to our Deposit Account No. 50-2121.

Respectfully submitted,  
Bergano, Neal S.

By his Representatives,

Grossman, Tucker, Perreault & Pflieger, PLLC  
55 South Commercial Street  
Manchester, NH 03101  
603-668-6560

By: /Donald J. Perreault/  
Donald J. Perreault  
Reg. No. 40,126